

**ABSTRACT**

Systems and methods measure a round trip delay of voice packets through a telephone system that includes a plurality of cabinets connected through a network. Each cabinet includes a link for communicating with other cabinets through the network by passing information such as voice packets. Each link includes a field programmable gate array (FPGA) that inserts and reads information in the voice packets to measure a time delay of the network. A first cabinet link sets a transmit bit in a voice packet directed to a second cabinet and starts a timer. The second cabinet monitors the transmit bit in received voice packets to determine if the bit is set. If so, the second cabinet sets a receive bit in the next outgoing voice packet directed to the first cabinet. The first cabinet monitors the receive bit in incoming voice packets and if set, stops the timer. The resulting value in the timer reflects the network delay.